

The Flora of Mt. Orizaba

H. Seaton

The following notes and report are based upon a collection of plants made on Mt. Orizaba by the writer while Botanist of the J. I. Seavell expedition during July and August, 1891.

The first collections on Mt. Orizaba to which there is any scientific reference were made by Frederick Liebmann in 1841. He describes the volcano as the most remarkable mountain in North America. It has a latitude of 18° and lies surrounded by the very fertile country of Southern Mexico. It is only 90 miles from the gulf and having such a situation, there is presented up on its Eastern slope every phase of vegetation from tropical to alpine.

The regions in the vicinity of Cordoba and Orizaba at elevations of 3000' and 4000' and distances of sixty and seventy five miles from the coast were the lowest stations at which collections were made. At that altitude the vegetation is sub-tropical. Palm, coffee, banana and orange trees grew in abundance and maize and sugar cane attained a high degree of cultivation. Prominent

among the families that made up the shrubby herbaceous flora were the Malvaceae, Leguminosae, Cucurbitaceae, Rubiaceae, Compositae, Asclepiadaceae, Convolvulaceae, Solanaceae, Euphorbiaceae and Commelinaceae besides the grasses, sedges and ferns. In the vicinity of Orizaba, the Compositae had their greatest display. The essentially American Helianthoideae were the forms most abundant and not only are they characteristic of this particular region but have in Mexico their greatest concentration, amounting, it has been estimated to 32% of the species and $\frac{2}{5}$ of the genera of all the Compositae of the country. The suborder Eupatorieae ranks second in numerical strength, the genera Eupatorium & Stevia however contributing nearly all the species. The Asteroideae had but little representation in the forms that are so characteristic of the north, - Solidago, Aster and Erigeron. All the other suborders of Compositae were present, excepting the Archotidae and Calendulaceae which are confined to Africa and the Mediterranean region.

Collections were made at three successively higher stations till the altitude of 9000° was reached asplenium and the grasses of the sandy plain below. This was the highest point collections were made by the writer but several species extend their range a few hundred feet higher and Dr. J. secured a Oraba at

below. This was the highest point collections were made by the writer but several species extend their range a few hundred feet higher and Dr. S. secured a *Draba* at 15000°. The — is a list of the species as they have been deter. and at the close a synopsis of the dis. of the f. g. & sp.

and this zone of 5000° may be considered as the temperate region and that above 9000° as alpine.

Many plants of the sub tropical region extended their range to the temperate and even to the alpine district, this being especially true of low growing plants like *Oxalis*, *Stellaria*, *Trifolium* and several of the *Malvas*.

The temperate zone between 4000° and 9000° is characterized nevertheless by many genera & families that are not present or are hardly noticeable in the more tropical regions. The genus *Salvia* and order *Lythracæ* have an especially large distribution. Of the latter, *Cuphea* is the most important element, growing in great abundance under all conditions of soil & moisture. There are many representations from the *Geraniaceæ*, *Borraginæ*, *Scrophularinæ*, *Verbenaceæ*, *Bignoniaceæ*, *Acanthaceæ* and *Amarantaceæ* which take the place in a great measure of the *Cucurbitæ*, *Rubiaceæ*, *Asclepiads*, *Solanums*, *Euphorbias* and *Commelinas* in the tropics.

Great changes are experienced in the flora as the slopes are ascended above 9000°, and there are well marked zones for the distribution of the plants till the limit of vegetation is reached. Between 9000° and 10000°

species of *Sisymbrium*, *Lepidium*, *Geum*, *Gaura*, *Epilobium*, *Oenothera*, *Gouardia*, *Krynitzkia*, *Minulus*, *Castilleja*, *Verbena*, *Salvia*, *Plantago* and *Chenopodium* are the most characteristic forms of the herbaceous flora. Prominent among the Compositae are *Stevia*, *Achillea*, *Dahlia* and *Tagetes* and besides *Eupatorium* and *Baccharis*, the shrubby flora is represented by *Rubus* and *Symphoricarpos*. Prominent among the grasses are *Bromus*, *Festuca*, *Agrostis*, *Tridax*, *Poa* & *Muehlenbergia* and the ferns are represented by *Asplenium*, *Adiantum*, *Cheilanthes* & *Hoodsia*.

At 11000' - 12000', the forests are entirely of pines & spruce. The greater part of the herbaceous flora at this alt. is made up of *Penstemon*, *Malenia*, *Cerastium*, *Acaena*, *Eryngium*, *Aracacia*, *Cnicus*, *Lupinus* & *Stenanthium*.

At 13000', the vegetation consists principally of *Nasturtium*, *Cerastium*, *Arenaria*, *Potentilla*, *Phacelia*, *Castilleja* & *Lithospermum*. The pine woods beginning at 7000', disappear at 13000', excepting stunted forms that continue to 14000'.

At 13500' the vegetation becomes scantier and the slopes more sandy and beset with masses of sharp pointed black & gray rocks. The dry ground produces species of *Draba*, *Gnaphalium*, *Senecio*, *Cnicus*, *Agrostis*, *Bromus* & *Asplenium*.

Even at 14000' on the higher slopes just at the snow line, there exists quite a varied vegetation with species of *Draba*, *Sisymbrium*, *Gnaphalium*, *Cnicus*

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The regions in the vicinity of Cordoba & Orizaba at elevations of 3,000' and 4,000' and distances of 60 and 75 miles from the coast were the lowest stations at which collections were made. At that altitude, the vegetation is sub-tropical. Palm, coffee, banana^{banana} and orange trees grow in abundance and maize & sugar cane attain a high degree of cultivation. Prominent among the families that make up the shrubby and banana

herbaceous flora were the Malvaceae, Leguminosae, Rubiaceae, Compositae, Asclepiadaceae, Convolvulaceae, Solanaceae, Euphorbiaceae and Commelinaceae besides the grasses, sedges and ferns) (In the vicinity of Orizaba ~~the~~ Compositae had their greatest display. The essentially American Helianthoidae were the forms most abundant and not only are they characteristic of this particular region, but have in Mexico their greatest concentration, amounting, it has been estimated, to 32% of the species and $\frac{2}{5}$ of the genera of all the Compositae of the Country. The sub-Order Eupatorioidae ranks second in numerical strength, the genera Eupatorium & Skoia however, contributing nearly all the species.

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pine. Many plants of the sub tropical region extend ~~up~~ their range to the temperate and even to the alpine district, this being especially true of low growing plants like *Oxalis*, *Stellaria*, *Trifolium* and several of the *Malvas*. The temperate zone is characterized nevertheless by many genera & families that are not present or are hardly noticeable in the more tropical regions. The genus *Salvia* & Order *Lythraceae* have an especially large distribution. Of the latter, *Cuphea* is the most ^{is the} ~~most~~ ^{conspicuous} element, growing in great abundance under all conditions of soil & moisture. There are many representations from the *Geraniaceae*, *Borragineae*, *Scrophularineae*, *Verbenaceae*, *Acanthaceae* & *Amarantaceae* which take the place in a great measure of the *Rubiaceae*, *Asclepiads*, ^{aceae} *Solanums*, ^{aceae} *Euphorbias* and *Commelinads* ^{aceae} in the tropics.

Great & rapid changes are experienced in the flora as the slopes are ascended above 9000', and there are well marked zones for the distribution of the plants till the limit of vegetation is reached. Between 9000' and 10,000', species of *Sisymbrium*, *Lepidium*, *Geum*, *Gaura*, *Epilobium*, *Oenothera*, *Krynitzkia*, *Mimulus*, *Castilleja*, *Verbena*, *Salvia*, *Plantago* and *Cheilanthes* are the most characteristic forms of the herbaceous flora. Prominent among the *Compositae* are *Skovia*, *Achillea*, *Dahlia* & *Tagetes* and besides *Eupatorium* & *Baccharis*, the shrubby flora is represented by *Rubus*, *Symphoricarpos* & *Buddleia*. Prominent among the grasses are *Poa*, *Festuca*, *Agrostis* and *Muhlenbergia* and the ferns are represented by

Asplenium, Adiantum, Cheilanthes and Woodsia.

At 11,000°-12000°, the forests are entirely of pines & spruce. The greater part of the herbaceous flora at this altitude is made up of Penstemon, Malenia, Cerastium, Acaena, Eryngium, Aracacia, Cnicus, Lupinus & Stenanthium.

At 13,000°, the vegetation consists principally of Nasturtium, Cerastium, Arenaria, Potentilla, Phacelia, Castilleja & Lithospermum. The pine woods beginning at 7000°, disappear at 13000°, excepting stunted forms that continue to 14,000°.

At 13,500° the vegetation becomes scantier and the slopes more sandy & beset with masses of sharp pointed black & grey rocks. The dry sandy soil produces species of Draba, Gnaphalium, Senecio, Cnicus, Agrostis, Bromus and Asplenium.

Even at 14,000° on the higher slopes just at the snow line, there exists quite a varied vegetation with species of Draba, Siumbrum, Gnaphalium, Cnicus, Asplenium & the grasses of the sandy plain below. This was the highest point at which collections were made but several species extend their range a ~~few~~ hundred feet higher & Dr. Scovell secured a Draba at 15,000°.

~~The following is a list of the species as they have been determined and at the close is a synopsis of the distribution of the families, genera & species.~~

~~In the limited space~~

Ranunculaceae.

- L. dezer Jausch
- 1 *Thalictrum longistylum* - D.C. Along streams.
Orizaba - 4000°. July 25.
 - 2 *Anemone Mexicana* - HBK. Rocky woods near
Maltrata - 5482°. Aug 16.
 - 3 *Ranunculus groides* - HBK. ~~Booth into cany. by Mt. O~~ Pine forests - Mt.
Orizaba - 11000°. Aug 5.
 - 4 *Ranunculus peruvianus* - Pers. Mt. Orizaba, ⁽²⁾
13000° - Aug 7.

Papaveraceae.

- 5 *Anemone Mexicana* - L. Common in open
fields - Esperanza Aug 14. 8000°.

Cruciferae

- 6 *Nasturtium impatiens* Ch & Schell. Mt. O.
9000° - Aug 4.
- 7 *Thelypodium* sp? Mt. O. 11000°. Aug 5.
- 8 *Draba myosotidoides* - Hems. Mt. O. 14000° - Aug 7
- 9 *Thelypodium* sp? Mt. O. 10000° - Aug 8.
- 10 *Sisymbrium canescens* - Nutt. Mt. O. 14000° - Aug 7.
- 11 *Sisymbrium* ^{straystoca. pum} ~~galeottianum~~ - Jausch. Mt. O.
9000°. Aug 4.
- 12 *Brassica sativa* - L. (Introduced) Common
Orizaba. 4000°. July 23.
- 13 *Sisymbrium* sp? Mt. O. 9000°. Aug 7.

- 14 *Lepidium virginicum* L. Mt. O. 9000°. Aug. 9.
 15 *Lepidium humboldtii* D.C. Mt. O. 9000° Aug 9.

Capparidaceae

Gynandropsis speciosa DC.

- 16 *Cleome* sp.² Cordoba. 3000°. Aug. 20
 17 *Cleome* sp.² Cordoba 3000° Aug. 20.

Polygalaceae

- 18 *Polygala* - n. sp.² near *acicularis* - Wat. a
 sp. described from Chihuahua in '86.
 19 *Polygala* - sp.² Cordoba 3000°. Aug 21.
Berlandiera sp.² *Scoparia* 11515

Caryophyllaceae

- 20 *Silene laciniata* Cav. In shady rich ra-
 vines. Mt. O. 10000°. Aug 8.
 21 *Cerastium volcanicum* Schl. Mt. O. 12000°. Aug 6.
 22 *Cerastium* sp.² Mt. O. 11000°. Aug 6.
 23 *Cerastium* sp.² Mt. O. 13000. Aug 7.
 24 *Stellaria prostrata* - Bald. Climbing on
 rocks. Arizaba 4000° July 29.
 25 *Stellaria nemorum* L. Cordoba, 3000° Aug 20.
 26 *Arenaria alsinoides* - Willd. Mt. O. 9000°. Aug 6.
 27 *Arenaria alsinoides* - H. (narrow leaved
 form) Arizaba 4000°. July 31.

- 28 *Arenaria decussata* Willd. - Mt. O. 11000°. Aug 8.
 29 *Arenaria* sp^r. Mt. O. 9000 - Aug 8.
 30 ~~*Drymonia*~~ *anomala* Walp. 9000° - Aug 8.
 (Not reported by Hemsl. from Mex.)

Hypericineae.

- 31 *Hypericum pauciflorum* HBK. Orizaba⁺
 4000°. July 30.

Malvaceae.

- 32 *Malva borealis* Wallm. (Introduced). Orizaba⁺
 4000°. July 29
 33 *Callinhol* - n. sp.^r. (*C. involucrata* the
 only sp. reported). Mt O. 9000°. Aug 4.
 34 *Malvastrum tricuspidatum* Gay. Orizaba
 4000°. July 23.
 35 *Anoda cristata* Schl. Orizaba, 4000° July 29.
 36 *Sida ulmifolia* Cav. Nogales 4204°. Aug 4.
 37 *Sphaeralcea* sp.^r City of M. 7000° July 20.
 38 *Pavonia spinifex* Willd. - Common - Orizaba
 4000° July 30.
 39 *Pavonia typhalea* Cav. Orizaba, 4000° July 30.
 40 *Malva viscus grandiflorus* - Orizaba⁺ & Nogales
 4000° & 4204°, Aug 24. & Aug 13.

Geraniaceae

- 41 *Geranium mexicanum* HBK. Mt. O. 10000°. Aug 8.

- 42 *Geranium hernandiezii* DC. Mt. O. 11000° Aug 5.
 43 *Geranium potentillaeifolium* DC. Mt. 10000° Aug 5.
 44 *Erodium cicutarium* - L. Her. Along the
 railroad - Esperanza 8000°. Aug 15.
 45 *Oxalis corniculata* - L. Orizaba 4000° July 29
 & Mt. O. 10000°, Aug 6.
 46 *Oxalis asperitilonis* - T. & G. Limestone
 ledges. Mt. O. 7000°. Aug 8.
 No oxalis is reported by Hems. from Mt. O.

Rutaceae

- 47 *Lanthoxylon* sp^r. Near City of M. 7000°
 July 20.

Simarubaceae

- 48 *Picramnia* sp^r. Orizaba 4000°. July 30.

Rhamnaceae

- ^{August 2}
 49 *Ceanothus* ~~sp.~~ sp. Rocky hills - near
 Maltrata - 5482° - Aug. 16.

Leguminosae

- 50 *Erotolaria* - nearest incana - L. Maltrata.
 5482°. Aug.
 51 *Erotolaria sagittalis* - L. Along railroad.
 Cordoba 3000° - Aug 21.

- 52 *Lupinus Mexicanus* - Cerv. Abundant
in Pine forests - Mt. O. 12000°. Aug 6.
- 53 *Lupinus elegans* - HBK. Mt. O. 12000° Aug 6.
- 54 *Lupinus* sp². Near Esperanza - on Rocky
hills. 8000°. Aug 14.
- 55 *Trifolium amabile* - HBK. - Mt. O. 10000. Aug.
- 56 *Trifolium reflexum* - L. (A very narrow
leaved form.) Orizaba. 4000°. July 29.
- 57 *Medicago lupulina* - L. (Introduced). Orizaba
4000°. July 23.
- 58 *Eysenhardtia amorphoides* - HBK. - Leaves &
pods very long! Near Maltrata.
5482°. Aug 16.
- 59 *Dalea plumosa* - Watson - n. var. 8000° Aug 15.
- 60 *Dalea sericea* - Lag. - Both Daleas on
rocky hills - near Esperanza.
- 61 *Indigofera mucronata* - Spreng. Nogales.
4202°. Aug -
- 62 *Indigofera* sp². Orizaba 4000°. July 2
- 63 *Astragalus Hillebrandii* - Gray. Mt. O. 9000°. Aug 8.
- 64 *Desmodium orbiculare* - Schlecht. Maltrata.
L 5482°. Aug 15.
- 65 *Desmodium* sp² - Esperanza - 8000° -
- 66 *Desmodium* sp² Orizaba 4000°
- 67 *Desmodium* sp² Orizaba 4000°
- 68 *Desmodium* sp² Mt. O. 10000. Aug 5.
- 69 *Dioclea* sp². Mt. O. 9000°. Aug 8.
- 70 *Phaseolus anisotrichus* - Sche. Oriz. 4000°.

- 71 *Phaseolus macropoides* - Gray. ² Ariz. 4000°
 72 *Phaseolus* sp². Esperanza. 8000° - Aug 15
 73 *Rhynchosia longeracemosa* - Mart & Gal.
 Arizaba. 4000°. July
 74 *Rhynchosia* sp² Mt. O. 9000°. Aug 8.
 75 *Rhynchosia* sp². Esperanza. 8000° Aug 14.
 76 *Eriosema* sp². Mt. O. 9000° Aug 8.
 77 *Sophora* sp². Cordoba. 3000° Aug 20.
 78 *Cassia chamaecrista* L. ² Coos. 3000° Aug 21.
 79 *Cassia occidentalis* - L. Nogales. 4202°.
 80 *Cassia patellaria* DC. Ariz. 4000° July 31
 81 *Lornia diphylla* Pers. Ariz. 4000°
 82 *Acacia farnesiana* - Willd. - Ariz. 4000°
 83 *Acacia filicina* - Willd. - Ariz. 4000°.
 84 *Pithecolobium brevifolium* - Benth. Esperanza.
 Rocky hills - 8000° Aug 15.

Rosaceae

- trilobus* Mac & Seave
 85 *Rubus* n. sp.² Near the Aqueduct.
 Mt. O. 10000° - Aug 8.
 86 *Rubus* sp². Found only in fruit. Mt. O.
 10000° Aug 6.
 87 *Geum* n. sp. nearest *macrophyllum*.
 Mt. O. 10000° Aug 8.
 88 *Potentilla richardii* - Rehm². Mt. O. 13000° Aug 7.
 89 *Acaena elongata* - L. Mt. 12000°. Aug 6.

Crassulaceae

- 90 *Cotyledon* sp² On shady cliffs - Esperanza
91 *Cotyledon* sp² 8000° - Aug 14.

Melastomaceae

- 92 *Rhexia* - sp². Cordoba. 3000° Aug 20
Hemsley doubts the presence of *R.*
in Mexico.
93 *Heeria* sp². Cordoba, 3000° Aug 20.

Lythraceae

- 94 *Cuphea aequipetala*, Cav. Esperanza, 8000°
95 *Cuphea cyanea* - DC². (Leaves scabrous!)
Oriz. 4000°
96 *Cuphea lysopifolia* - HBK. Cordoba.
3000° - Aug 20.
97 *Cuphea lanceolata* - Ait. (Pedicels not de-
flexed.) Oriz. 4000°
98 *Cuphea llavea* - Llave + Lex. Oriz. 4000°
99 *Cuphea Toluana* - Peyr. Esperanza. 8000°.

Onagraceae

- 100 *Epilobium mexicanum* - DC. Mt. O.
10,000° - Aug 8.

- 101 *Jussiaea peruviana* - L. Orizaba. 4000°
Aug 13.
- 102 *Jussiaea suffruticosa* - L. Oriz. 4000° Aug 13.
- 103 *Oenothera rosea* - Ait. Common in
open fields. Oriz. 4000. July 29.
- 104 *Oenothera sinuata* Mx. Mt. O. 10000° Aug 5-
- 105 *Oenothera* ~~*cuprea* Schlecht~~ ^{*cuprea* Schlecht} Pine forests. Mt.
O. 11500°. Aug 6.
- 106 *Lopezia mexicana* - Jacq. Rocky hills
Orizaba. 4000°. July 31.
- 107 *Lopezia pumila* HBK. Mt. O. 9000°. Aug. 8.
- 108 *Gaura coccinea* - Nutt. Mt. Oriz.
9000°. Aug. 4.

Passifloraceae

- 109 *Passiflora Mexicana* - Juss. Cordoba.
3000° - Aug. 20.

Cucurbitaceae

- 110 *Melothria scabra* - L. Aud. Mt. O. 9000°
Aug 4.

Begoniaceae

- 111 *Begonia megaphylla* - DC. Sides of
cliffs along rail road. Near
Matla - 5482°. Aug 16.

Umbelliferae

- 112 *Eryngium cymosum* Delar. Mt. O.
10000°. Aug 5.
- 113 *Eryngium probaeiflorum* - Delar. Mt. O.
12000°. Aug 6.
- 114 *Sanicula mexicana* DC. Orizaba. 4000°
July 29.
- 115 *Arracacia acuminata* - Benth. - Orizaba -
4000° - July 30.
- 116 *Apium leptophyllum* F. Müll. Mt. O. 9000°
Aug. 8. Reported for the first time
from Mt. O.
- 117 *Angelica mexicana* - Vathe - Oriz. 4000° July 29.
- 118 *Peucedanum* sp. Mt. O. 10000°
- 119 *Osmorhiza brevistylis* - DC. Mt. O.
12000° - Aug. 6.
- 120 *Daucus pusillus* - Mx. Mt. O. 10000°
Aug. 6. Reported for the first
time from Mt. O. the only station
given in Hemsley being Chihuahua.
- 121 *Arracacia* sp. Mt. O. 9000°
- 122 *Arracacia* sp. Orizaba, 4000°.

Caprifoliaceae

- 123 *Sambucus canadensis* - Linna. Rather common.
Orizaba, 4000° - July 29.

- 124 *Symphoricarpos microphyllus* - HBK. Mt. O.
10000° - Aug. 8.

Rubiaceae

- 125 *Bouvardia triphylla* - Sacle. Mt. O.
Shady woods - 10,000° - Aug. 5.
- 126 *Bouvardia quaternifolia* - DC. Mt. O. 10,000°
Shady Woods. Aug 5.
- 127 *Bouvardia leiantha* - Benth. Arizaba,
Rocky hill - 4000° - July 31.
- 128 *Houstonia* - n. sp.² (Rocky hills) Arizaba,
4000° - July 30.
- 129 *Crusea* sp² Arizaba - 4000° - July 31
- 130 *Crusea* sp² Mt. O. 10,000° - Aug. 6.
- 131 *Crusea*. sp². Cordoba, 3,000° - Aug. 21.
- 132 *Spermacoce laevis* - Lam. Arizaba -
4,000° - Aug 24.
- 133 *Spermacoce parviflora* - G. F. H. Mey. Cordoba,
3,000° - Aug 21.
- 134 *Richardsonia scabra*, A. S. Kil. Cordoba,
3,000° - Aug 21.
- 135 *Galium mexicanum* - HBK. Arizaba,
4,000° - July 31.
- 136 *Galium uncinulatum* - DC. Arizaba. 4,000° - July 29.
- 137 *Galium* - nearest propetatum, Hems. - Mt. O.
10,000° - Aug 5.

138 Valerianaceae

- 139 *Valeriana mexicana* - DC. Mt. O. 9000°. V.
Matratala - 5482° - Aug. 16.
140 *Valeriana scandens* - Linn. Along roads.
Orizaba - 4000°. July 27.

Compositae.

- 141 *Piqueria trinervis* - Cav. Mt. O. 9000°
Aug 8.
142 *Ageratum Mexicanum* - Sims - Orizaba -
4000° - July 26.
143 *Stevia conferta* - DC. var. *puberula* - DC (DC.
not Hemsl.) Mt. O. 9000° Aug 8.
143 *Stevia elatior* - HBK. Near Esperanza,
8000° - Aug 14.
144 *Stevia rostrifolia* ~~Willd~~ Willd - var. *Bogotensis*, DC.
Near Nogales - 4202° - Aug 13.
145 *Stevia lucida* - Lag. Near Matratala -
Rocky hills 5482° - Aug 16.
146 *Stevia salicifolia* - Cav. Mt. O. 9000° - Aug 4.
147 *Stevia trachelioides* - DC. (Leaves tomentose
below.) Matratala, 5482°. Aug 15.
148 *Eupatorium grandidentatum* - DC. Mt. O.
12000° - Aug 6.
149 *Eupatorium populifolium* - HBK. Around
fields - Orizaba - 4000° - July 26.

- 150 *Gymnosperma multiflorum* - DC. Near Maltrata on Rocky Hills - 5482° - Aug 15.
- 151 *Heterotheca inuloides* - Cass. Mt. O.
9000° - Aug 8.
- 152 *Aphanostephus humilis* - Gray. Mt. O.
10,000° - Aug. 5.
- 153 *Erigeron canadensis* - L. Common along deserted roads - Cordoba - 3,000° - Aug 20.
- 154 *Erigeron coronopifolius* - Gray. Mt. O.
10,000° - Aug. 5.
- 155 *Gnaphalium spicatum* - Lam. Mt. O.
10,000° - Aug. 8.
- 156 *Melampodium divaricatum* - DC. Common in open fields. Orizaba 4000° - July 23.
- 157 *Melampodium oblongifolium* - DC. Orizaba
4000° - Aug. 24.
- 158 *Melampodium perfoliatum* - HBK. Orizaba
4000° - July 27.
- 159 *Parthenium hysterophorus* - Linn. Orizaba
4000° - July 23.
- 160 *Ambrosia artemisiifolia* - L. Common along the rail road. ^{4000°} O. July 26.
- 161 *Linnia leptopoda* - DC. Maltrata on a rocky hill; 5482° - Aug. 15.
- 162 *Heliopsis bupthalmoides* - Dur. Common along railroad - Orizaba 4000° - Aug 24.
- 163 *Laluzania angusta* - Schz. Bip. Mt. O.
along sides of cliffs, 9000° - Aug 9.

- 164 *Sclerocarpus schiedeanae* - B. & H. Orizaba.
4000° - July 23.
- 165 *Tithonia diversifolia* - Gray - Not reported by
Hemsley. Orizaba - 4000° - Aug 24.
- 166 *Viguiera canescens* DC. Near Esperanza
8000° - Aug. 15.
- 167 *Viguiera*, n. sp.² Woods near Esperanza
8000° - Aug 15.
- 168 *Gymnolomia* - sp.² Woods near Esperanza.
8000° - Aug 15.
- 169 *Helianthus* - sp.² Abundant in open fields.
Esperanza - 8000° Aug 14.
- 170 *Melanthera deltoidea* - Rich. Rather common
along the R. R. Orizaba, 4000° Aug. 24.
- 171 *Actinomeris ovata* - Nutt. Near Esperanza,
8000° - Aug 14.
- 172 *Polymnia maculata* - Cav. Orizaba - 4000°
Rocky Hill - July 31.
- 173 *Synedrella vialis* - Gray - Orizaba, 4000° July 25
Not reported by Hems.
- 174 *Dahlia coccinea* - Cav. Orizaba, 4000° - July 13.
- 175 *Dahlia variabilis* - Desf. In Shady ravines -
Mt. O. 10000° - Aug 8.
- 176 *Galinsoga parviflora* - Very Common in
roadsides - Orizaba - 4000° July 23
- 177 *Dysodia chrysanthemoides* - Lag. Along the
Veracruz R. R. near City of M. 7000° - July 20

- 178 *Taqetes erecta* - L. Along the rail road
near Cordoba - 3000° - Aug 21.
- 179 *Taqetes lucida* - Cav. In open fields. Nogales.
4202° - Aug 13.
- 180 *Taqetes patula* - L. Rocky hill - near Es-
peranza - 8000° - Aug 15
- 181 *Chrysactinia mexicana* - Gray. Rocky hill - near
Esperanza - 8000° - Aug 15.
- 182 *Achillea millefolium* - L. Common on sandy
plains near Esperanza - 8000° - Aug 15.
- 183 *Senecio gerberaeifolius* - Schott. Mt. O.
13,500° - Aug 7.
- 184 *Senecio procumbens* - HBK. Mt. O.
13,500° - Aug 7.
- 185 *Schistocarpus bicolor* - Less. Near Cordoba
3000° - Aug 21.
- 186 *Sonchus oleraceus* - L. (Common as an intro-
duced weed). Orizaba - 4000° - July 7
Esperanza - 8000° - Aug 14.
- 187 *Pinaropappus roseus* - Less. On limestone
ledges - Mt. O. 9,000° - Aug 8,

Lobeliaceae

- 189 *Lobelia laxiflora* - HBK. Along banks of
streams, Cordoba - 3000° - Aug 20.
- 190 *Lobelia* spⁿ. Mt. O. 9000° Aug.

Plumbagineae

- 191 *Plumbago pulchella* Boiss. Maltrata -
Rocky Hill - 5482° - Aug 15.

Primulaceae

- 192 *Anagallis arvensis* - L. (Introduced) Woods
near Maltrata - 5482° - Aug 16.

Asclepiadaceae

- 193 *Asclepias curassavica* - L. Common in
open fields. Arizaba 4000° & Nogales 4302°
194 *Asclepias ovata* - Mart. & Gal. Rocky Hill
Arizaba, 4000° July 31.
195 *Gonolobus fraternus* Schl. Arizaba,
4000° - July.
196 *Gonolobus gracilis* - DCne. Rocky Hill -
Maltrata - 5482° - Aug 15.

Loganiaceae

- 197 *Buddleia lanceolata* Benth. Mt. O.
9000° - Aug 4.

Gentianeae

- 198 *Halenia nudicaulis* Mart & Gal. Mt. O.
12000° - Aug 6.

Polemoniaceae

caerulea - Dou.

- 99 *Loeselina* - ~~Q~~ sp. Mt. O. 9000° - Aug. 9.

Hydrophyllaceae

- 200 *Phacelia* ^{pumilioides} n. sp. Mt. O. 11500° - Aug 5

Borraginaceae

- 201 *Heliotropium Indicum* - L. Cordoba. 3000°. Aug 21.
202 *Heliotropium limbatum* - Benth. Grassy hills
near Maltrata - 5482° - Aug. 16.
203 *Krynitzkia angustifolium* - Torr. Common at
10000°. Mt. O. Aug. 8.
204 *Lithospermum distichum* - Art or *spathulatum*, M. & G.
Grassy hills. Esperanza. 8000°. Aug 14.
205 *Lithospermum strictum* - Lehm. Esperanza. Aug 14.
206 *Lithospermum* - sp^r. Mt. O. 12000° - Aug. 6.

Convolvulaceae

- 207 *Ipomaea* sp^r. Arizaba 4000° Aug 24.
208 *Ipomaea* ~~sp~~ ^{stans - Cav.} Esperanza. 8000° Aug 14.
209 *Ipomaea* sp^r Mt. O. 9000°. Aug 8.
210 *Ipomaea* sp^r Cordoba. 3000° Aug 21.
211 *Ipomaea* sp^r Cordoba 3000° Aug 21.
212 *Ipomaea* sp^r Arizaba 4000° July 25.
213 *Ipomaea* sp. Arizaba 4000° July 25.
214 *Ipomaea bona-nox* - L. Arizaba July 25.

- 215 *Cuscuta gonovii* Willd. - Common on Ambrosia.
 Orizaba, 4000°. July 23.

Solanaceae

- 216 *Solanum nigrum* - L. Mt. O. 9000°. Aug 5.
 217 *Solanum prostratum* Dun. Mt. O. 9000. Aug 5.
 218 *Solanum tuberosum* - L. Mt. O. 10,000 Aug 5.
 219 *Solanum torvum* - Swg. (very variable -)
 Near Cordoba - 3,000° Aug 20.
 220 *Solanum amazonium* - Ker - Cordoba,
 3,000° Aug 20.
 221 *Solanum demissum* - Lindl. Esperanza,
 8,000° Aug 14.
 222 *Solanum elaeagnifolium* - Cav. Orizaba
 4000°. July 27.
 223 *Solanum* sp². Esperanza - Sandy fields. Aug 15.
 224 *Physalis aequata* - Jacq. Esperanza, 8,000° Aug 15.
 225 *Physalis Philadelphica*, Lam. var. minor!
 Orizaba, 4000°. Small form at Cordoba, 3000°. 2
 226 *Sarracha gattomata* - Schl. Cordoba, 3000°. Aug 21.
 227 *Datura arborea* - L. Orizaba - 4000° July -
 228 *Cestrum* sp². (Common) Cordoba, 3000°. Aug 20.
 229 *Nicotiana* - nearest Mexicana - Schl.
 Orizaba - 4000°. July 30.

Scrophulariaceae

- 230 *Penstemon barbatus* - Nutt. Grassy hills
 near Esperanza - 8000°. Aug 14.

- 231 *Penstemon imberbis* Trautv. Esperanza, 8000° Aug 14.
- 232 *Penstemon gentianoides* Dow. Mt. O.
12000° - Aug 6.
- 233 *Penstemon perfoliatus* Bong. Mt. O. 11000° Aug 5.
- 234 *Mimulus luteus* L. Mt. O. along the
aqueduct. 9000° - Aug 4.
- 235 *Mimulus* sp^r. Esperanza - 8000° - Aug 14
- 236 *Sibthorpia pichinchensis* - HBK. Mt. O.
10,000° - Aug. 6.
- 237 *Veronica peregrina* - L. ~~Wheat fields - near~~
~~Esperanza~~ Mt. O. 10,000° Aug 6.
- 238 *Veronica agrestis* L. (A naturalized sp. from the
old roads). Wheat fields. Esperanza. Aug 15.
- 239 *Buchnera pilosa* Benth. Arizaba, 4000°. July 31.
- 240 *Castilleja lithospermoides* - HBK. Mt. O.
11,500°. Aug. 6.
- 241 *Castilleja integrifolia* - L. Mt. O. 9000°. Aug. 4.
- 242 *Lamoureauxia cordata* Ch. & Schl. Esperanza,
8000° Aug 14. & Ariz. 4000°. July 31.
- 243 *Lamoureauxia multifida* - HBK. Arizaba -
Rocky Hills - 4000° - July 31.

Orobanchaceae

- 244 *Pinguicula caudata* - Schl. Shady
cliffs. Maltrata, 5482°. Aug. 16

Gesneraceae

- 245 *Anechanthus parviflorus* - B. & H. Mt. O.
10,000° - Aug. 6.

Bignoniaceae.

- 246 *Icoma stans* - Tuss. var. *velutina* - DC or
n var. Maltrata, 5482°. Aug 15.

Acanthaceae.

- 247 *Calophanes ovata* - Benth - Fields near
 Nogales 4202°.
- 248 *Calophanes schiedeana* - Nels. Hills near
 Maltrata. 5482° Aug 15.
- 249 *Calophanes angustifolia* - Hemsl. Hills
 near Arizaba - 4000° - July 31.
- 250 *Ruellia glandulosa-punctatus* - Hills west
 of Arizaba - 4000° - July 31.

Verbenaceae

- 251 *Lantana camara* - L. Common around Ori-
 zaba. 4000° - July 25.
- 252 *Lantana hirsuta* - Mart & Gal. Rocky hills
 near Arizaba - 4000° July 31.
- 253 *Lantana hispida* - HBK. Arizaba. 4000° July 29.
- 254 *Lippia repens* - HBK. Reported for the
 1st time from Arizaba, July 29.
- 255 *Priva echinata* - Tuss. Common around
 Arizaba - July 25.
- 256 *Verbena bipinnatifida* - Maltrata, 5482°. Aug 15.

- 267 *Verbena ciliata* - Benth - Arizaba - July 23
 268 *Verbena tenuifolia* - M. & G. Mt. O.
 9000°, Aug 9
 269 *Verbena* n. sp.[?] Sandy hills near Esperanza - 8000°, Aug 14.
 270 *Tamonea scabra* - Ch & Schl. Along streams -
 Cordoba, 3000°, Aug 20.
 271 *Citharexylum reticulatum* - HBK. Arizaba -
 near a dwelling - 4000° - ^{July} Aug 29.

Labiatae

- 272 *Quimem carnosum* - L. & O. Arizaba - 4000° ^{July}
 273 *Hyptis stellulata* - Benth - Arizaba - 4000° ^{July}
 274 *Hyptis spicata* - Poir. - Arizaba - 4000°, July 25.
 275 *Micromeria brownei* - Benth - Roadsides
 near Cordoba, 3000° - Aug 21.
 276 *Lepechinia spicata* - Willd - Mt. O.
 9000° - Aug 8.
 277 *Salvia angustifolia* - Cav. - Mt. O. 9000°, Aug 8.
 278 *Salvia Grahami* - Benth - Mt. O. 9000°, Aug 8.
 279 *Salvia patens* - Cav. - Maltrata, 5482° - Aug 15
 280 *Salvia tillaeifolia* - Vahl. - Arizaba, 4000° ^{July 28}
 281 *Salvia ballotaeflora* - Benth - Maltrata, Aug 15
 282 *Salvia amarissima* - Ort. - Near Esperanza,
 8000° - Aug 14.
 283 *Salvia elegans* - Vahl. - Mt. O. 10000° Aug 15
 284 *Salvia hyptioides* - M. & G. - Near Cordoba,
 3000° Aug 20.

- 285 *Edronella Mexicana* - Benth. ² Mt. Ariz.
In Ravines - 10,000° - Aug 8.
- 286 *Brunella vulgaris* - L. Hills near Matlata,
5482° - Aug 16.
- 287 *Marrubium vulgare* - L. Mt. O. -
10,000° - Aug 8.
- 288 *Stachys*
Scutellaria caerulea - Mac. & Sesse.
Hills near Arizaba, 4000°, July 31.
- 289 *Stachys agraria* - Ch. & Schl. Arizaba - July 29.
- 290 *Stachys coccinea* - Dc. Rocky hill near
Arizaba - 4000° - July 31.
- 291 *Stachys Drummondii* - Benth. Arizaba. Aug 24.
- 292 *Stachys repens* - M. & G. ² Peak of O. 10,000°
Aug 5.
- 293 *Stachys* - (S 4. Genuinae of XII Sec - Cephalohystis ²)
- 294 *Leucium inflatum* - Sw. Near Arizaba
4000° July 29.

Plantagineae

- 295 *Plantago major* - L. Common in wet
places - Arizaba. 4000°. July 29.
- 296 *Plantago Virginica* - L. Arizaba - July 29.
- Plantago Xorullensis* - HBK. Peak of
Arizaba. 11,000° Aug. 6.

Nyctagineae

- 297 *Oxybaphus viscosus* L'Her. Sandy plains
near Esperanza - 8000 - Aug 14.

Amarantaceae

- 298 *Amarantus blitum* - L. Very Common in
Orizaba. 4000° - July 23.
299 *Gomphrena decumbens* - Jacq. Hills near
Maltrata. 4582° - Aug 15
300 *Gomphrena globosa* - L. Orizaba - July 29
301 *Iresine gracilis* - M. & G. Orizaba - July 25
302 *Iresine Hookeri* - Moq. Orizaba July 23.

Chenopodiaceae

- 303 *Chenopodium incisum* - Poir Peak of Orizaba.
10,000° - Aug 6.
304 *Chenopodium foetidum* - Schrad - Peak of O.
10,000° - Aug 6.

Phytolaccaceae

- 305 *Phytolacca octandra* - L. Nogales. 4202° Aug 13.

Polygonaceae

- 306 *Polygonum glabrum* - Willd - Orizaba July 25
307 *Polygonum hydropiperoides* - Mx., Orizaba July 29
308 *Polygonum nodosum* Pers. Orizaba - July 23
309 *Polygonum segetum* - HBK. Near Cordoba
3000° Aug 20
310 *Rumex crispus* L. var. *mexicanus* M. & G.
Peak of Orizaba - 9000° - Aug 4.
311 *Rumex* sp? Esperanza, 8000°. Aug 15.

311 *Rumex* sp^r. Eperanza, 8000°. Aug 15.

Piperaceae

312 *Piper aduncum* L.^r Orizaba - 4000°. July 30.

Euphorbiaceae

313 *Euphorbia graminea* - Jacq. Orizaba -
4000°. July 29.

314 *Euphorbia Preslii* - Guss. Orizaba - July 26.

315 *Euphorbia* sp^r. Mt. O. 10,000°. Aug. 6.

316 *Euphorbia* sp^r. Cordoba - 3000°. Aug 20.

317 *Phyllanthus lathyroides* - HBK. var *genuinus*
Müll - Orizaba, 4000°. July 30.

318 *Protow Mexicana* - Müll - Mt. O. 9000° Aug 4.

319 *Protow glabellus* - Linn - Near Cordoba

320 *Argythamnia* sp^r. Oriz.) 3000°. Aug 20.

321 *Acalypha macrostachya* - Jacq. Cordoba,
3000°. Aug. 20.

322 *Acalypha* sp^r Eperanza - 8000° Aug 14.

323 *Acalypha* sp^r Orizaba - 4000° July 23.

324 *Ricinus communis* - L. Common in
Orizaba - 4000°. July 23.

Urticaceae

325 *Urtica flabellata* - HBK. Orizaba - 4000°. July 29.

Cupuliferæ

- 326 *Quercus insignis* - M. & G. ? Mt. O.
9-10,000° Aug 7.
327 *Quercus florosa* - Lieb ? Mt. O. 9-11,000° Aug 7.

Salicineæ

- 328 *Salix* - n sp ? Maltrata 5482° - Aug 16.

Coniferæ

- 329 *Pinus* - sp. Mt. O. 10,000 - 14,000° Aug 7.
330 *Abies religiosa* - Cham & Schell. Mt. O. 12,000° Aug 7.

Irideæ

- 331 *Nemastylis tenuis* - Benth - Rocky hill, Orizaba - 4000° - July 31.
332 *Sisyrinchium angustifolium* - Mill -
Orizaba. 4000° - July 29.
333 *Sisyrinchium hartwegi* - Bak ? Orizaba, July 26
334 *Sisyrinchium scabrum*. Ch. & Schell ? Mt. Oriz.
9000°, Aug 9.
335 *Sisyrinchium tinctorium*. HBK. Esperanza -
Wooded Hills. 8,000° - Aug 15.

Amaryllideæ

- 336 *Hymenocallis* sp ? Orizaba, 3,000° - Aug 20.

- 337 *Bomarea* spⁿ. Orizaba - 4000°. July 31
 338 *Bomarea* spⁿ Orizaba 4000° July 25.

Liliaceae

- 339 *Smilax* spⁿ Cordoba, 3000° - Aug. 20.
 340 *Smilax* spⁿ. Cordoba, 3000° - Aug 20
 341 *Yucca* spⁿ Esperanza, 8000° Aug 15,
 342 *Yucca* spⁿ Esperanza, 8000° Aug 15.
 343 *Anthericum Torreyi* - Bak. First time re-
 ported from S. Mex. Esperanza, 8000°, Aug 14.
 344 *Echeandia terniflora* - Ait. - Very Common,
 Orizaba, Cord. & Nogales.
 345 *Allium* N sp. Mt. O. 10,000° - Aug. 6.
 346 *Stenanthium frigidum* Kunth - Peak of
 Orizaba, 12,000° Aug. 6.
 347 *Lygadenus* ? Orizaba - 4000° - Aug 13.

Commelinaceae

- 348 *Commelina dianthifolia* - DC. Peak of Oriza-
 ba - 11,500° - Aug 6.
 349 *Commelina virginica* - L. Common around
 Orizaba - 4,000° - July 23.
 350 *Tradescantia cumanensis* - Kunth - Cordoba,
 4,000° - July 23.
 351 *Tradescantia* spⁿ Orizaba, 4,000° - July 29
 352 *Tradescantia* spⁿ Orizaba 4,000 July 31

- 353 *Induscantia* sp^r - Cordoba, 3,000°. Aug. 20
 354 *Induscantia* sp^r Esperanza, 8,000°. Aug 15.

Scitamineae

- 355 *Canna* sp^r Cordoba, 3,000, Aug 20
 356 *Canna* sp^r Cordoba, 3,000 Aug 21

Cyperaceae

- 357 *Cyperus* sp^r Orizaba, 4,000°. July 31
 358 *Cyperus* sp^r " " " "
 359 *Cyperus* sp^r " " " 29
 360 *Cyperus* sp^r " " " 27
 361 *Cyperus* sp^r " " " "
 362 *Cyperus* sp^r City of Mexico, 7,000° - July 20
 363 *Cyperus* sp^r Peak of Orizaba, 9,000° Aug 8
 364 *Cyperus* sp^r Orizaba, 4,000° Aug 13
 365 *Scirpus* sp^r Cordoba, 3,000° Aug 21.
 366 *Rhynchospora* sp^r Cordoba, 3,000° Aug 20.

Gramineae

- 367 *Paspalum* sp^r Orizaba, 4,000° July 29
 368 *Paspalum* sp^r " " " "
 369 *Paspalum* sp^r " " " 31.
 370 *Panicum* sp^r " " " 29
 371 *Panicum* sp^r Cordoba, 3,000° Aug 20

- 372 *Panicum* ² sp² Esperanza. 8,000° Aug 14.
- 373 *Panicum* sp² City of Mex. 7,000° July 20
- 374 *Panicum* ² sp² Cordoba. 3,000° Aug 20
- 375 *Panicum* sp² Peak of Orizaba. 10,000° Aug 6
- 376 *Panicum* sp² Peak of Orizaba 9,000° Aug 9.
- 377 *Setaria* sp² Orizaba. 4,000° July 31
- 378 *Setaria* sp² City of Mex. 7,000° July 20
- 379 *Setaria* sp² Peak of Oriz. 9,000° Aug 8.
- 380 *Setaria* sp² Peak of Oriz. 10,000° Aug 6
- 381 *Cenchrus* sp² Orizaba. 4,000°. July 27.
- 382 *Erianthus saccharoides*. Mx. Orizaba. 4,000° July 31
- 383 *Andropogon* sp² Nogales. 4,202°. Aug 13.
- 384 *Andropogon* sp² Orizaba. 4,000° July 31
- 385 *Andropogon* sp² Orizaba. 4,000° July 31
- 386 *Aristida* ² sp² Esperanza. 8,000° Aug 14
- 387 *Aristida* sp² Peak of O. 11,000° Aug 5
- 388 *Aristida* sp² Peak of O. 10,000 Aug 5
- 389 *Stipa* sp² Cordoba. 3,000° Aug 20
- 390 *Muehlenbergia* sp² Peak of O. 9,000° Aug 8
- 391 *Muehlenbergia* sp² Cordoba. 3,000. Aug 21
- 392 *Muehlenbergia* sp² City of Mex. 7,000° July 20
- 393 *Sporobolus* ² sp² Orizaba. 4,000° Aug 10
- 394 *Agrostis* sp² Peak of O. 13,000°. Aug 6.
- 395 *Agrostis* sp² Peak of O. 12,000° Aug 6
- 396 *Agrostis* sp² Peak of O. 9,000 Aug 9.
- 397 *Pisetum* sp² Peak of O. 13,000 Aug 7
- 398 *Bouteloua* sp² Orizaba. 4,000° July 31
- 399 *Bouteloua* sp. Peak of O. 9,000°. Aug 8.

- 400 Eleusine sp². Common in Orizaba, 4000°. July 27
 401 Eragrostis sp² Esperanza, 8000° Aug 14.
 402 Eragrostis² sp² Peak of O. 9000° Aug 9.
 403 Poa sp Peak of O. 9000° Aug 8.
 404 Festuca² sp² Peak of O. 14000°. Aug 7.
 405 Festuca sp² Peak of O. 13000° Aug 7.
 406 Festuca sp² Peak of O. 10000° Aug 6.
 407 Elymus sp² City of M. 7000° July 20
 408 Bromus² sp² Peak of O. 10000° Aug 6.

Filices

- 409 Cyathea mexicana - Ch. & Sche. Wet ravines
 Orizaba - 4000° Aug 26.
 410 Woodsia mexicana - Fee. (Hems. includes it
 under W. mollis T. Sm.) Peak of O. ^{9000°} Aug 8.
 411 Cystopteris fragilis - Bernh. Peak of O. 10000° Aug 8.
 412 Adiantum concinnum - HBK. Orizaba,
 4000° - July 25.
 413 Adiantum tetraphyllum Willd. Ravines
 near Cordoba, 3000° Aug 20.
 414 Adiantum (near convolutum, Fourn).
 Orizaba, 4000°. July 31.
 415 Hypolepis repens - Presl. Orizaba, 4000° July 27
 416 Cheilanthes alabamensis - Fee (Included under
 microphylla by Hems.) Orizaba, 4000 July 31.
 417 Cheilanthes Fendleri Hook. Peak of Orizaba
 9000° Aug 6.

- 418 *Cheilanthes microphylla* - Swz. Common
on hills near Orizaba, 4000°. July 31.
- 419 *Leavea cordifolia* - Lag. Near Maltrata.
5482°. Aug 16
- 420 *Pellaea flexuosa* - Linné - Orizaba - 4000°. Aug 13
- 421 *Pellaea* - (Between *angustifolia* Bak & *Park-lyae* Bak.) Nogales - Aug 13
- 422 *Pellaea* - Nearest glauca T.Sm. (which *Hems.*
includes under *marginata* Bak) Peak of O. 9000° Aug 8
- 423 *Pellaea* N. Sp? Orizaba - 4000° July 26
marginata (Near *marginata* Bak)
- 424 *Pellaea marginata* B. var. *pyramidalis* B.
Orizaba - 4000° July 31.
- 425 *Pellaea intramarginalis* - T.Sm. Maltrata.
5482° - Aug 15.
- 426 *Pteris aquilina* - L. Orizaba. 4000 Aug 13.
- 427 *Pteris longifolia* - L. Orizaba 4000 Aug 13.
- 428 *Pellaea rigida* - HB. Orizaba 4000. Aug 13.
- 429 *Pellaea ternifolia* - L. Peak of O. 9000° Aug 5.
- 430 *Blechnum occidentale* - L. Orizaba 4000° July 27.
- 431 *Asplenium* - (Near *cultifolium* - L. - which
is not reported fr. Mex) Cordoba, 3000° Aug 20
- 432 *Asplenium firmum* - Kunze. Cordoba. Aug 20
- 433 *Asplenium fragrans* - Swz. Cordoba, 4000°. Aug 20
- 434 *Asplenium monanthum* - L. Peak of Oriz.
10,000° - Aug 6.
- 435 *Asplenium trichomanes* - L. Peak of Orizaba.
14,000° Aug 7.

- 436 *Asplenium Shepherdii*. Spreng. Cordoba,
3000° Aug 20
- 437 *Aspidium patens* - Swz. Orizaba - 4000° Aug 13.
- 438 *Aspidium trifoliatum* - Swz. Orizaba. 4000° Aug 13.
- 439 *Nephrolepis exaltata* - Schott. Orizaba. 4000° July 27.
- 440 *Polypodium angustifolium* - Swz. Orizaba. 4000. A.B.
- 441 *Polypodium furfuraceum* Schl. Common on
442 roofs of houses - Orizaba - 4000° - July 23.
- 443 *Polypodium glaucophyllum* - Kze.²² Cordoba -
Cultivated. 3000°. Aug 21.
- 444 *Polypodium lanceolatum* - L. Peak of Orizaba -
Growing on trees - 11,500° - Aug 6.
- 445 *Polypodium lycopodioides* - L. Cordoba. 3000 Aug 21
- 446 *Polypodium pectinatum* - L. Cordoba. 3000. Aug 21
- 447 *Polypodium phyllitidis* - L. Cordoba. 3000° Aug 21
- 448 *Polypodium pulchrum* - Mr. G. Orizaba. 4000. July
- 449 *Polypodium thysanolepis* - Al Br. Orizaba -
4000. July 25.
- 450 *Phegopteris*
- 451 *Phegopteris rudis* - Mett. Orizaba - 4000° July 27.
- 452 *Phegopteris tetragonum* Swz. Cordoba 3000° Aug 20.
- 453 *Phegopteris* sp². Cordoba, 3000° Aug 20.
- 454 *Notholaena ferruginea* - Kk. Orizaba. 4000°. July 31
- 455 *Notholaena sinuata* - Kaulf. Oriz. 4000°. July 31.
- 456 *Gymnogramme calomelanos* - Kaulf.² (Fronds
too large) Orizaba - 4000°. Aug 13.
- 457 *Gymnogramme podophylla* -ourn. (Included
by Hems. under *ibenbergiana*. Nogales -
4202° - Aug 13

Equisetaceae.

- 458 *Equisetum robustum* - A.Br. Along streams
near Nogales - 4202° - Aug 13.

Selaginellaceae

- 459 *Selaginella cuspidata* Spring. Orizaba -
4000° - Aug 13.
460 *Selaginella rupestris* Spr. Cordoba 3000° Aug 20
461 *Selaginella* sp^r. Cordoba, 3000° Aug 20.
~~~~~<sup>r</sup>. Peak of Orizaba, 13,000° Aug 7.

The following list is added,———

- 462 *Ranunculus Hookeri* - Schl. Orizaba. OK  
4000° - July 23  
463 *Arenaria bryoides* - Willd. - Peak of O. 13000° Aug 7.  
464 *Hibiscus Moenchii* L. (Cultivated) Cordoba, 3000° - Aug 21.  
465 *Waltheria Americana* - L. - Along the rail  
road - Nogales - Aug. 4.  
466 *Hieracium macroptera* DC, Orizaba - 4000° - July 30.  
467 *Rhynchosia longiracemosa* M & G. Peak of O. 9000° - Aug 8.  
467 *Indigofera excelsa* M & G. Peak of O. 9000° Aug 8.  
468 *Trifolium* sp<sup>r</sup>. Orizaba - 4000° July 29  
469 *Lespedeza* <sup>r</sup>. Orizaba, 4000 - Aug 24  
470 *Cassia* sp<sup>r</sup> - Peak of O. 9000° Aug 8.  
471 *Mimosa Lindheimeri* Gay, Maltrata - 5482. Aug 16

- 472 *Desmodium pilocarpum* Gay, Peak of O. 9000° Aug 8.
- 473 *Oenothera* sp. ————— Peak of O. 9000° Aug 8
- 474 *Linum mexicanum* HBK, Orizaba 4000° - July 31
- 475 *Erigeron mucronatus* - DC - Orizaba, 4000. July 29.
- 476 *Erigeron scaposus* - DC - Orizaba - 4,000° July 29
- 477 *Erigeron maximus* - Otto. Orizaba, 4000 - July 31.
- 478 *Erigeron delphinifolius* Willd? Peak of Orizaba -  
9000° - Aug 8
- 479 *Erigeron longipes* - DC - near Matlatzatzin -
- 480 *Raccharis rhexioides* ————— 5482° - Aug 16.  
HBK - Orizaba - 4000° 4)  
City of M. 7000°.
- 481 *Aster divaricatus* - Nutt. Orizaba - 4000° July 29
- 482 *Graphalium leptophyllum* - D.C. Peak of O.  
14000° - Aug 7.
483. *Sanvitalia procumbens* Lam. ————— Peak of  
Oriz. 9000° - Aug 8.
484. *Pyramnia discolor* - Schrad. Orizaba,  
4000° - July 31.
- 485 *Verbesina microcephala* Benth? Orizaba -  
4000° July 31
- 486 *Speanthes beccabunga* - DC. Cordoba,  
3000° - Aug 20
- 487 *Conopsis liebmanii* - Schr? Mt. O. 9000° Aug 8
- 488 *Bidens heterophylla*, Art. Common in  
Orizaba - 4000° - Aug 23.
489. *Indax trilobata* - Hemsl. Peak of Oriza-  
ba, 9000° - Aug 8.



- 490 *Parthenium tomentosum* DC. Peak of  
Orizaba - 9000°. Aug 8.
- 491 *Helenium Mexicanum* - HBK. Esperanza,  
9000°. Aug 14.
- 492 *Erechtites runcinata* - DC. Orizaba, 4000° July 30
- 493 *Senecio helodes* - Benth. - Peak of Orizaba -  
13,000°. Aug 7
- 494 *Senecio multidentatus* - Schz. - Peak of Orizaba  
12,000°. Aug 7.
- 495 *Senecio* sp<sup>2</sup>. Peak of Orizaba - 14,000°. Aug 7.
- 496 *Cnicus nivalis* - HBK. - Peak of Orizaba  
12,000°. Aug 7.
- 497 *Cnicus puberulus* - Hemsl. Peak of  
Orizaba - 12,000° Aug 7.
- 498 *Hieracium* n. sp. near Gonovic and  
micropoppum.
499. *Hieracium mexicanum* - Less<sup>22</sup>. Peak of  
Orizaba - 10,000° Aug 5.

18 — Plants unclassified —

517

The collection consists of  
68 Families - 154 Genera and 517 Species  
distributed as follows —

|                      | Families | Genera   | Species |
|----------------------|----------|----------|---------|
| <u>Phanerogams</u>   | 65       | 137      | 465     |
| <u>Pteridophytes</u> | 3        | 17       | 52      |
| Total                | 68 Fam.  | 154 Gen. | 517 Sp. |

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